

## CHAPTER 6 COLLECTOR ROADS AND STREETS

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## CHAPTER 6 COLLECTOR ROADS AND STREETS

### 6.0 INTRODUCTION

The following guidelines, applicable to collector roads and streets, are presented on a functional basis. This chapter will be subdivided into rural collectors and urban collectors.

Consult Chapter 3 and Chapter 4 of this Guide for details on the basic design elements applicable to this classification of roadway.

The use of design dimensions more liberal than the minimums described herein is recommended where economically feasible. In all cases, every effort should be made to get the best possible alignment, grade, sight distance, and proper drainage consistent with the terrain, present and proposed development, safety and available funds.

Safety is an important factor in all roadway improvements. On low-volume roads or streets or in urban areas it may not be possible to provide obstacle-free roadsides. As much clear roadside as practical should be provided. The judicious use of flatter slopes, roadside barriers, and warning signs helps to achieve roadside safety. Proper placement of utility features also assists in achieving safer roadsides.

Noise abatement may need to be considered; see section 4.13 and Chapter 18 for more information.

The *Highway Capacity Manual* (1) provides the designer with the tools to evaluate the level of service for the highway facility under consideration. Collector streets should generally be designed for 20-year level of service C. In heavily developed sections of metropolitan areas, conditions may necessitate the use of level of service D. In rural areas a level of service C is desirable for collector roads. However, level of service D is practical where unusually high traffic volumes exist or where terrain is rolling or mountainous. See section 2.3.1.

Alternate design criteria may be considered for collector roads and streets that carry a lower volume. Consult Chapter 13 for Alternate Standards (Low Volume Roads).

### 6.1 RURAL COLLECTORS

#### 6.1.1 General Design Considerations

A major part of the rural highway system consists of two-lane collector highways. The rural collector routes generally serve travel of primarily intra-county rather than statewide importance and constitute those routes on which predominant travel distances are shorter than on arterial routes. Rural collectors should be designed to accommodate the highest practical standards compatible with traffic and topography. Basic information necessary for design of collectors includes accident history, traffic volumes, terrain controls, and alignment.

### **6.1.1.1 Design Speed**

Geometric design features should be consistent with a design speed appropriate for the conditions. See Table 6-1, Minimum Design Speeds for Rural Collectors, *PGDHS (1)* to determine appropriate design speeds as a function of volume and terrain.

### **6.1.1.2 Grades**

Suggested maximum grades for rural collectors are a function of terrain and design speed, see Table 6-2 in the *PGDHS (1)*.

### **6.1.1.3 Vertical Curves**

Design control for vertical sag and crest curves are provided in Table 6-3 and Table 6-4 in the *PGDHS (1)*. Criteria for measuring stopping sight distance includes an eye height of 3.5 feet and an object height of 2.0 feet. Passing sight distance includes an eye height of 3.5 feet and the object height is also 3.5 feet.

## **6.2 URBAN COLLECTORS**

### **6.2.1 General Design Considerations**

Urban areas are those places having a population of 5,000 or more within boundaries set by the responsible State and local officials. Urban areas are further subdivided into urbanized areas (population of 50,000 and over) and small urban areas (population between 5,000 and 50,000). For design purposes, the population forecast should be for the design year (usually 20 years).

A collector street is a public facility that includes the entire area within the right of way. The urban collector street also serves pedestrian and bicycle traffic and often accommodates public utility facilities within the right of way. The improvement or development of streets should be based on a functional street classification and should be sensitive to the comprehensive development plan of the local community. The design values should be those for the ultimate planned development. In general, design values for collector streets should be greater than the minimums cited. See Table 6-8, Maximum Grades for Urban Collectors, *PGDHS (1)* to determine appropriate grades as a function of design speed and terrain.

Access control on urban collector streets should be used primarily to ensure that access points conform to the adopted criteria for safety, location, design, construction, and maintenance. See Chapter 11 and the *State Highway Access Code (2)* for access control requirements.

### **6.2.2 Parking Lanes**

Although on-street parking constitutes a safety problem and impedes traffic flow, parallel parking lanes currently are conventional on many collector streets. Parallel parking will normally be acceptable on urban collectors where sufficient street width is available to provide parking lanes. Where needed in residential areas, a parallel parking lane 8 feet in width should be provided on one or both sides as the conditions of lot size and intensity of development may require. In commercial and industrial areas, parking lane widths should range from 8 to 11 feet. Parking lanes are usually provided on both sides.

Parking lane width determinations should include consideration for likely ultimate use as a lane for moving traffic either during peak hours or continuously.

Where curb and gutter sections are used, the gutter pan width may be included as a part of the minimum width of parking lane, but desirably the lane widths should be in addition to that of the gutter pan.

### **6.2.3 Drainage**

See section 5.2.11.

### **6.2.4 Sidewalks**

See section 5.2.13.

### **6.2.5 Sidewalk Curb Ramps**

See section 5.2.14.

### **6.2.6 Border Area**

See section 5.2.15.

**REFERENCES**

1. TRB. *Highway Capacity Manual*, Washington, D.C., Transportation Research Board: 2010.
2. Colorado Department of Transportation, Colorado State Transportation Commission, *The State Highway Access Code*, 2 CCR 601-1.